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**Thermal Conductivity Test Results
Northeast Correctional Center
Mountain City, Tennessee**

Earth Energy Engineering performed a thermal conductivity test at the Northeast Correctional Center in Mountain City, Tennessee on November 11, 1999. Testing was done by Bill Nagle with a Ewbank portable test unit.

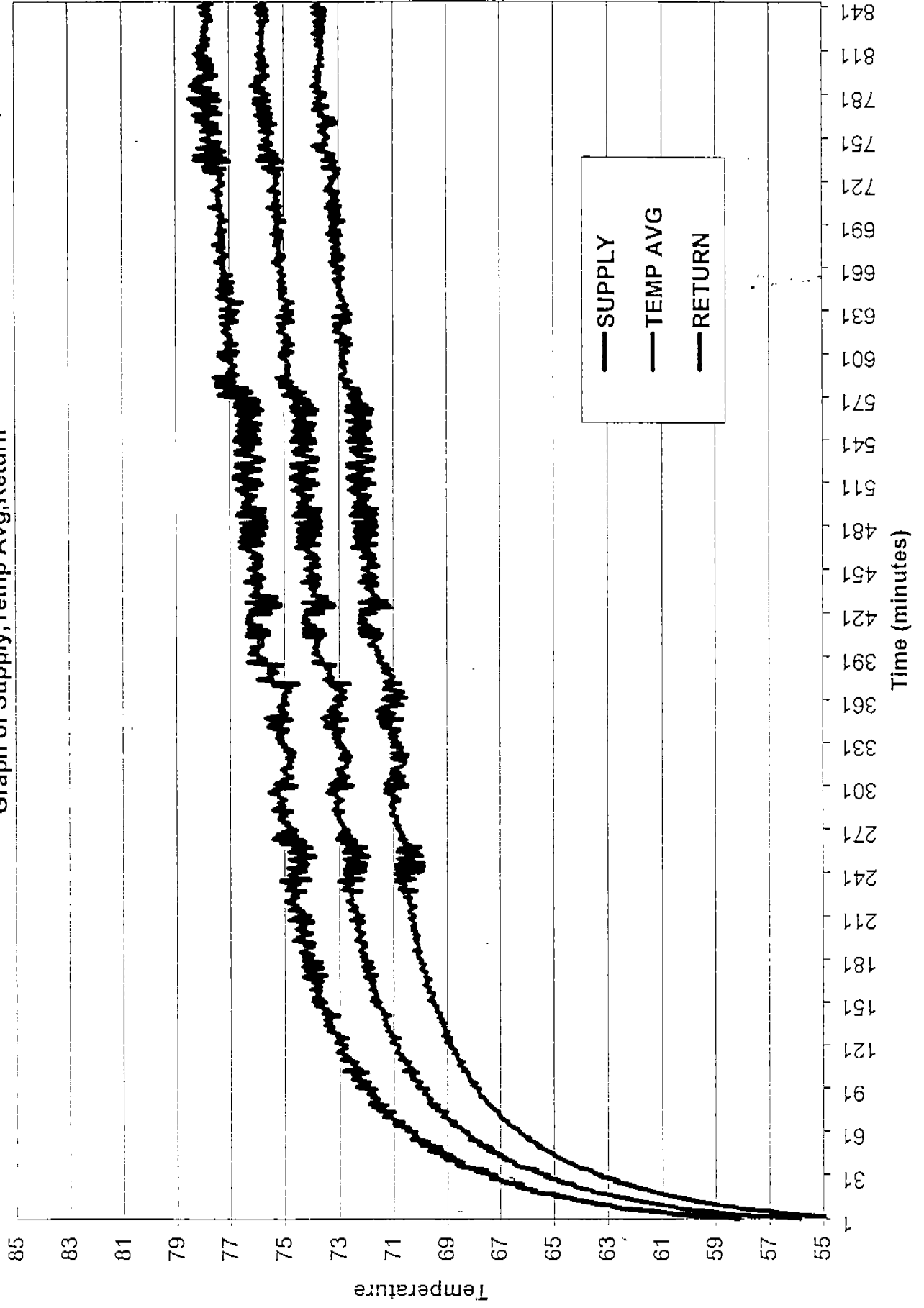
The test borehole was 270 feet in depth and 6" in diameter. A 1" inch loop was installed and the borehole was backfilled with #8 stone. Static water level was not reported. The formations encountered were 80 feet of overburden, sandstone from 80 to 235 feet, and flint from 235 to 270 feet.

The power supply for this test was somewhat erratic. The temperature graphs show this effect. The thermal conductivity value was calculated over a 7 hour period to mitigate this problem.

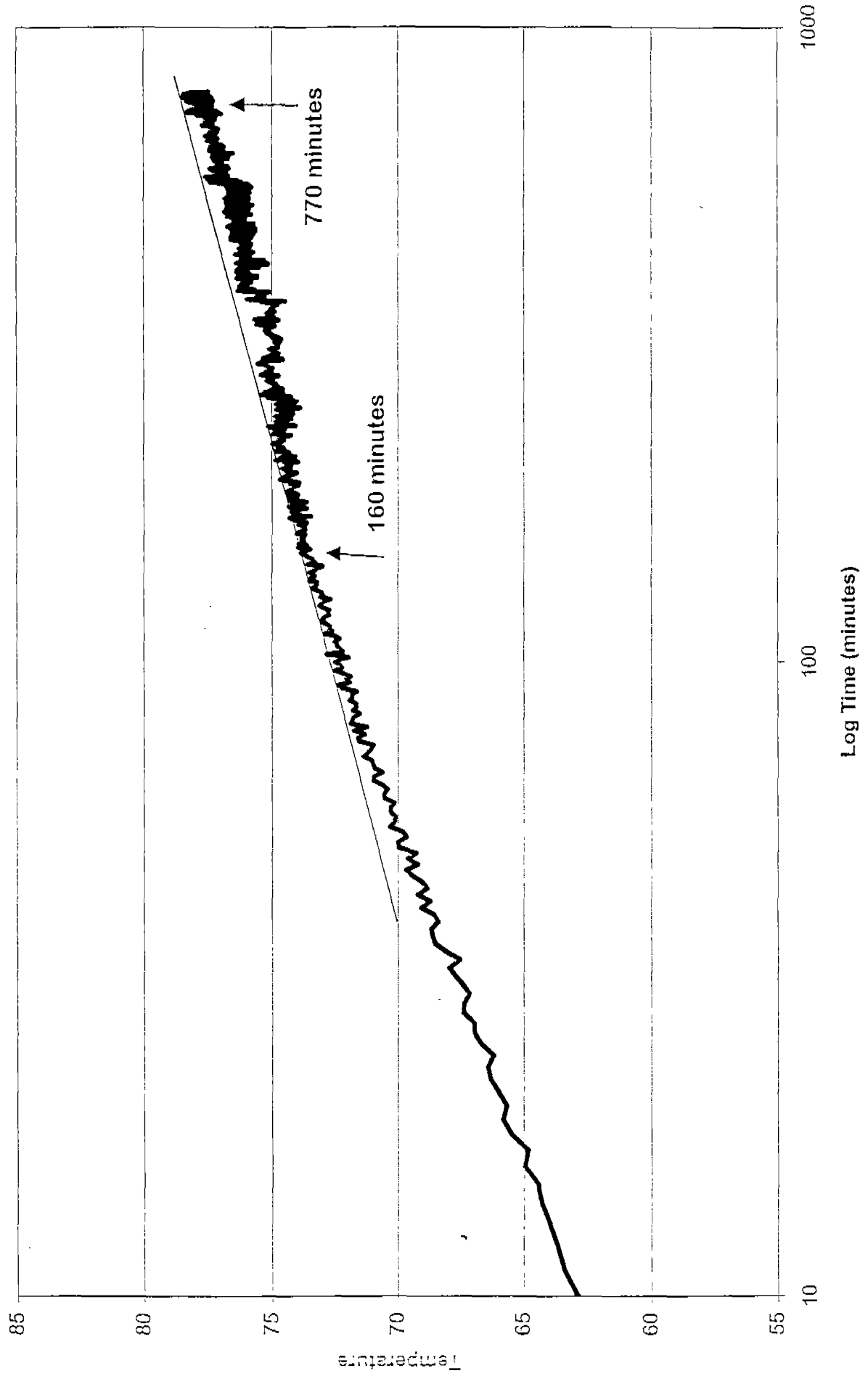
The thermal conductivity (k) values for this borehole is **1.54 btu/degree F-hr-foot**. This is an average conductivity per foot for the borehole. This value represents the rate at which the borehole and rock will transfer heat. To accurately measure the thermal conductivity of the formation a borehole should be drilled and grout with a bentonite grout to prevent any flow of water through the borehole.

All test equipment, methods, procedures, calculations, and interpretation is done in accordance with the recommendations and guidelines of the International Ground Source Heat Pump Association.

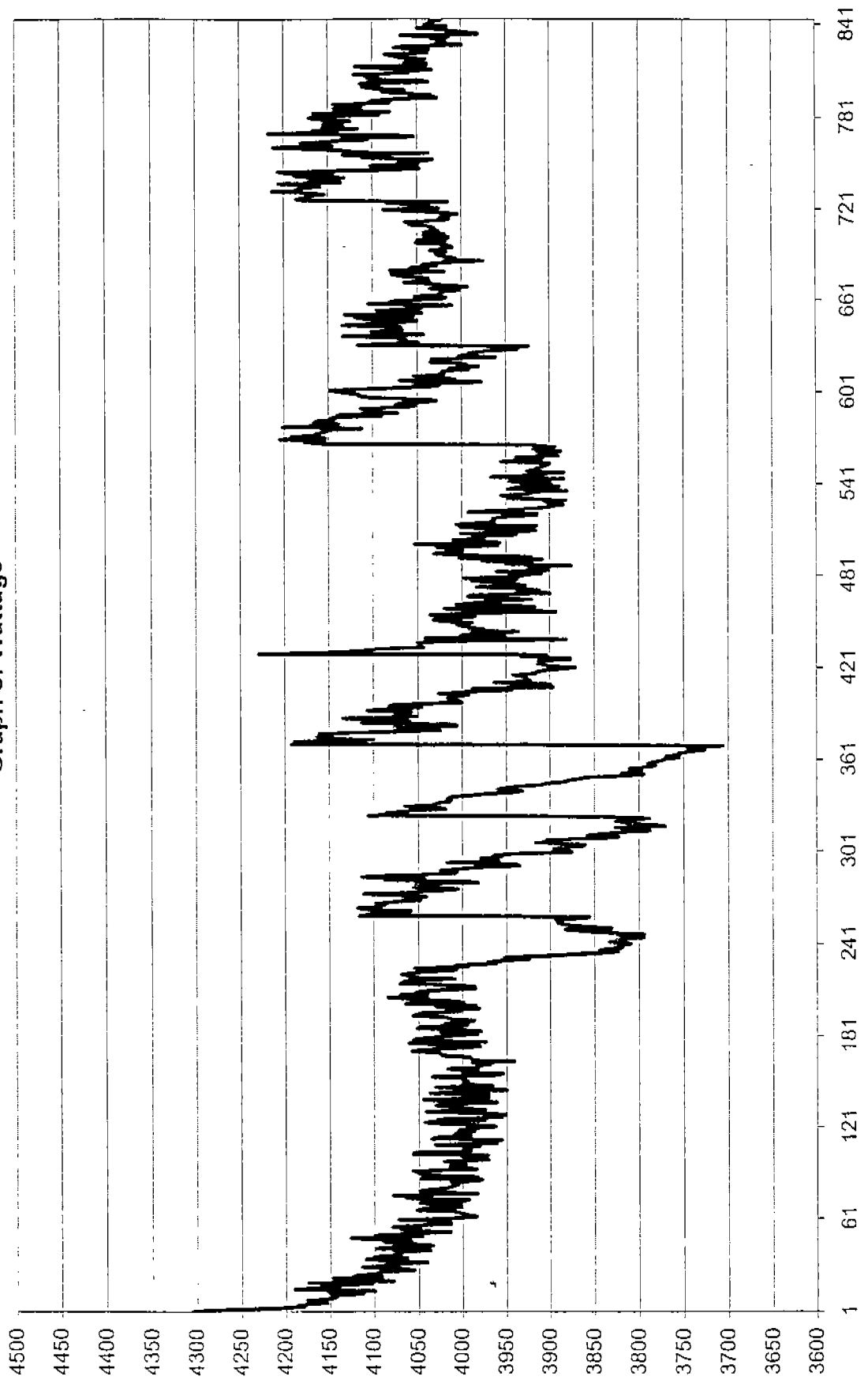
Northeast Correctional Center
Thermal Test
Graph of Supply, Temp Avg, Return



Northeast Correctional Center
Thermal Test
Graph of Log Time of Temp Avg



Northeast Correctional Center
Thermal Test
Graph of Wattage



Drill Log for North East Correctional Center

Hole # 1

Outside minimum security fence

121 ft steel casing inserted and left in place

From ft	To ft	Material	GPM
0	5	Topsoil	
5	80	Clay & gravel	
80	90	Broken sandstone soft	
90	121	Soft sandstone	
121	230	Sandstone	
230	235	Broken sandstone	30
235	295	Gray flinty rock (granite)	
Total water make			30